Inventions & Innovation Project Abstract

Citrus Waste Biomass

Florida has 103 million citrus trees on 800,000 acres that last season provided 287 million boxes of citrus (80 percent of U.S. production.); 85 percent went to Florida's 23 citrus processing plants. In juice processing one half of a citrus fruit is waste, yielding 5 million tons of wet waste, equating to 1.25 million tons of dry waste. Traditional use for these residues is as cattle feed which currently does not have sufficient value to cover the production/transportation costs. These materials are rich in pectin and other polysaccharides which can be hydrolyzed into sugars. This equates to a potential production of 120 million gallons of ethanol per year.

Renewable Spirits LLC intends to develop an innovative pilot ethanol bio-refinery to optimize production processes and establish the commercial viability of ethanol production utilizing waste citrus biomass. Renewable Spirits will refine ethanol production methods developed in partnership with the USDA/ARS Citrus and Subtropical Products Laboratory (Citrus Lab) and the University of Florida Renewable Fuels Lab and develop a processing plant that also extracts marketable by-products such as pectin and limonene to improve the economics of fuel production. Renewable Spirits will optimize processes and develop a model refinery.

The refinery will contribute to improving energy efficiency and the economics of biomass technology by reducing ethanol prices regionally and consequently providing a viable alternative fuel and a regional replacement for the controversial MTBE gasoline octane enhancer currently being used.

Contact

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